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praiseworthy feature of this treatise. In the *Bulletin*, page 113, is a communication from E. T. Hamy, on The Negritos of Borneo, which also refers to authorities, and is accompanied by two tables, one of cranial and the other of facial measurements. A paper in the *Bulletin*, page 145, upon excavations in the dolmen of l'Aumède (Lozere), is interesting on account of a discussion which grew out of it with reference to cremation in dolmens of this description, and evidences of syphilis. — O. T. MASON.

GEOLOGY AND PALÆONTOLOGY.

THE DISCOVERY OF LÆLAPS IN MONTANA. — The carnivorous *Dinosauria* were the largest and most formidable flesh-eating animals that ever lived on the earth, the *Carnivora* of the present day being comparatively insignificant. In the Triassic period the gigantic *Bathygnathus* reduced the numbers of the reptilian life; and in the Jurassic the equally huge *Megalosaurus* devoured the herbivorous *Iguanodon*, etc. In North America the last of these saurian faunæ is abundantly represented in the lignitic beds of the West. Professor Cope has discovered during the past season numerous species of *Lælaps*, some of which were of gigantic size. One of these (*L. incrassatus*) is represented in his collections by a large part of an under-jaw, which is rarely preserved in this class of animals, but three or four others having been heretofore discovered. This animal was about the same size as the New Jersey *Lælaps*, but more robust. Several smaller species were obtained.

THE SEA SERPENTS OF THE CRETACEOUS PERIOD. — At one of the recent lectures of the course of the Philadelphia Zoölogical society, Professor Cope exhibited the greater part of the skeleton of a new species of *Elasmosaurus*. The length of the vertebral column is about forty feet, and several feet of vertebræ are wanting. The neck constitutes about half of the total length. The paddles of both pairs are preserved, which is not the case with any other specimen known. They prove to be relatively short, agreeing in this point and in the superior size of the front pair with a restoration he had published some years ago. The specimen was found in Nebraska, and the species was named *Elasmosaurus serpentinus*.

Professor Cope also stated that he had obtained on the Upper Missouri, during his expedition of the past year, a large part of the vertebral column of the *Elasmosaurus orientalis*, from beds corresponding with those in which he had originally found it in New Jersey. This species also has an enormous neck, and was of more robust proportions than the *E. serpentinus*.

THE DENTITION OF THE HERBIVOROUS DINOSAURIA OF THE LIGNITIC PERIOD. — At a recent meeting of the American Philosophical Society, Professor Cope exhibited portions of the skulls of several herbivorous Dinosauria, the huge land reptiles that during the lignitic period in North America took the place of the mastodons and elephants of later ages. He adduced Bartram's articles in proof of the relationship of these animals to the birds which he had originally pointed out from the structure of the feet. He also showed that they possess an extraordinary dentition, much more complex than that known to belong to the same class of animals heretofore described in Europe. The teeth are arranged in vertical columns which constantly grow at the base, and which are kept in place by grooves in the jaw-bones. In one genus, *Diclonius* Cope, each tooth of a column overlaps the ends of those above and below it; while in another, *Cionodon*, nearly every horizontal section of the jaw cuts three teeth. It was estimated that there were seven hundred teeth in the mouth of the former genus at one time, and two thousand in the mouth of the latter.

THE LOWEST MAMMALIAN BRAIN. — At a recent meeting of the American Philosophical Society, Professor Cope exhibited a cast of the brain cavity of a species of *Coryphodon* from New Mexico, and described its peculiarities. He stated that it is the lowest and most reptilian type of mammalian brain known, for the following reasons: the diameter of the hemispheres does not exceed that of the medulla, which is as wide as the cerebellum. The latter is small and flat. The middle brain is the largest division, much exceeding the hemispheres in size, being especially protuberant laterally. The hemispheres contract anteriorly into the very stout peduncles of the olfactory lobes. These continue undivided to an unusual length, and terminate in a large bulbus, which is at first grooved above, and then bifurcate at the extremity. The length of the hemispheres is one fifteenth that of the cranium, and their united bulk one twenty-seventh that of the hemispheres of a tapir of the same size. Their surface is not convoluted, and there is no trace of sylvian fissure. The region of the pons varolii is very wide, and exhibits a continuation of the anterior pyramids. The large size of the middle brain and olfactory lobes gives the brain as much the appearance of that of a lizard as of a mammal.

Professor Cope stated that three, and perhaps four, other examples of this type of brain are known. The first, described by Professor Gervais, is that of the flesh-eater, *Arctocyon*, from the same lower Eocene horizon as the *Coryphodon*. The next is that of the *Uintatherium*, of the Bridger Eocene, described by Marsh, who states that the hemispheres present a sylvian fissure, in which he is most probably in error, and whose figures do not exhibit the convolutions which he claims to have found. The third is that of the *Oxyæna*, described by Professor Cope, of which the middle brain is unknown, but which is probably like that of *Arctocyon*, in view of the close similarity in other respects.

In reviewing the evidence derived from the preceding sources, the opinion was expressed that the type of brain shown to exist in the *Amblypoda* and *Creodonta* is as distinct from that characterizing the primary divisions of the *Mammalia* as they are from each other, and that it necessitates the establishment of a special subclass for its reception, of equal rank with the groups *Gyrencephala* and *Lyencephala.* This was called the *Protencephala,* with the following definition: cerebral hemispheres smooth, small, leaving not only the cerebellum but the middle brain exposed behind, and contracting into the very large olfactory lobes in front. Cerebellum very small and flat; middle brain large. This character is sustained by that of the ankle joint, which, existing in two such distinct divisions as the *Amblypoda* and *Creodonta,* may be found to characterize the entire subclass, but this is not yet certain; it is as follows: tibio-astragalar articulation flat and without groove or segment of pulley.

This subclass stands below the *Lyencephala* in its position, approximating the reptiles in the points above-mentioned more nearly than the latter do. It includes two orders: one ungulate, the *Amblypoda*; the other unguiculate, the *Bunotheria.* To the former belong the suborders *Pantodonta* and *Dinocerata;* to the latter the *Creodonta* and probably the *Tillodonta* and *Tæniodonta.* Whether the *Mesodonta* belong to it is not certainly ascertained, while the *Insectivora* do not belong to it, as they are rightly placed in the subclass *Lissencephala.*

GEOGRAPHY AND EXPLORATION.

FARTHER NEWS FROM STANLEY. — Three letters written in August, 1876, have been received from Stanley. At that time he had reached his old quarters at Ujiji. He had circumnavigated Lake Tanganyika, which is about as large as Lake Michigan. He has apparently added little to what Cameron discovered. He describes a section of the Lukuga River, about eight miles in length, in order to prove that Captain Cameron was incorrect in regarding it as the outlet of Lake Tanganyika, though such, adds Stanley, it is destined to become. He explored Lukuga to a point three miles beyond that reached by Cameron, discovered that the outward current gradually ceased, and that the river-bed finally changed into a marsh thickly covered with papyrus. Following the borders of this marsh for two miles further, he again reached a stream, the waters of which flowed distinctly westward, passing by an abrupt gorge through a mountain range one thousand two hundred feet high. It is called the Luindi, and is a tributary of the Lualaba of Livingstone. Mr. Stanley asserts that the level of Tanganyika Lake is rising so rapidly that in a few years the waters of the Lukuga and the Luindi will unite, the intervening marsh disappear, and a permanent outlet thus be created.

THE TOPOGRAPHICAL SURVEY OF NEW YORK. — The governor of New York having opposed the passage of a bill in the legislature of that State making appropriations for continuing the state geographical survey, begun so well by Mr. James T. Gardner, resolutions urging the passage of the bill have been sent in by the leading universities and colleges